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ABSTRACT

This study investigates the effect of mode of expression on the syntactic complexity of writing produced by third-grade children. Approximately 200 samples of writing in the modes of argumentation, exposition, narration, and description were collected from 50 third graders in the Atlanta school district. Syntactic complexity, as measured by length of writing sample, number of clauses per sample, and number of words per clause, was revealed to be highest in the argumentative mode. Although the differences in complexity between exposition and narration seem to depend upon the analytic tool used, the descriptive mode was shown to evoke the least syntactic complexity regardless of the type of analytic instrument. The development of children's formal cognitive and linguistic processes may be stimulated by writing activities which parallel these processes in level of difficulty. (KS)

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THE IMPACT OF MODE ON WRITTEN SYNTACTIC COMPLEXITY:

PART I--THIRD GRADE

by

J. D. PERRON

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The impact of the modes of discourse on the writing of children has been the subject of limited research for more than 40 years. Ever since J. C. Seegars (1933) revealed how children writing an argument or explaining a procedure seem to produce more complex structures than they do writing a narrative or describing an event, researchers have been interested in clarifying mode's effect on writing performance.

Following the revolution in linguistics brought about through the work of Chomsky, Kellogg W. Hunt (1965) developed new procedures for the analysis of writing across the grades. Seegars' pioneering effort had looked to the numbers of dependent clauses for gauging the complexity of children's written productions. Hunt's work cast doubt on such clause-based studies. In effect, he shifted the spotlight in writing analysis away from the parts and back to the full sentence, or "T-unit" (minimal terminable unit). The T-unit not only took into consideration independent clauses, but also dependent clauses and non-clause elements.

Christine San Jose (1972) used Hunt's methods to investigate the impact of mode on the writing of fourth graders. Her results indicated that different modes utilized different syntactic complexity levels. The fourth graders of her study utilized significantly different amounts of syntactic complexity in the four modes of argumentation, exposition, narration, and description--and in the same direction as Seegars' original claims. Where Seegars had cautioned teachers and researchers to be alert to the different impacts of the modes in evaluating and analyzing children's writings, San Jose further cautioned researchers against

determining writing maturity levels without regard for the modes in which the writings took place.

However, an implication overlooked by both Seegars and San Jose was how the different modes themselves may encourage writing development--in a very natural way--by presenting different syntactic challenges. This possibility becomes more obvious when linguistic and cognitive insights are brought together.

Piaget's initial inspiration for developmental psychology was the concept of "equilibration," which to this day remains its basic principle. Equilibration lies at the functional heart of the human cognitive system. Comparing it to learning itself, Phillips (1975) describes equilibration as a continuous process, with the cognitive structures going through changes that result in qualitative differences from time to time. He explains:

> Structures continually move toward equilibrium, and when a state of relative equilibrium has been attained, a structure is sharper, more clearly delineated, than it had been previously. But the very sharpness points up inconsistencies and gaps in the structure that had never been salient before. Each equilibrium state therefore carries with it the seeds of its own destruction, for the child's activities are thenceforth directed toward reducing those inconsistencies and closing those gaps. Equilibrium is always dynamic and is never absolute, but the product of each of the major units of development (Sensorimotor, Concrete Operations, and Formal Operations) is a relatively equilibrated system of actions--an equilibrium. (1975, pp. 16-17)

Thus, Piaget's theory portrays intellectual development as a process of equilibrium moving through disequilibrium to a new level of equilibrium--organization and reorganization. With each reorganization, the old structural operations are integrated into the newer, more

complex ones. This can be compared with linguistic development in that children attain higher levels of syntactic complexity by incorporating previous syntactic structures into newer, more advanced ones (Chomsky, 1969; Menyuk, 1969).

Developmental psycholinguists have noted other similarities between linguistic and cognitive operations in language experiments involving children at various developmental stages. H. Sinclair-de-Zwart's studies (1969) led to the conclusion that "operational structuring and linguistic structuring or rather linguistic restructuring thus parallel each other" (p. 275).

Such parallel entities may develop in a related way, but there is little proof that language precedes cognition. According to Slobin (1971): "...the pacesetter in linguistic growth is the child's cognitive growth" (p. 184). Piaget (1970) claims that structures of thought are rooted in action and sensorimotor mechanisms which apparently lie deeper than linguistic structures. Slobin believes: "We are just beginning to sense the intimate relations between linguistic universals and cognitive universals, and are far from an adequate developmental theory of either" (1971, p. 176).

Piaget's description of operational structuring processes may guide us generally, but an empirically based description of linguistic structuring and restructuring may offer specific insights into the way the two "parallel" and "intimately related" processes develop.

With such foundational notions concerning language and cognition, the imagination stretches toward an explanation for an interesting

phenomenon described in San Jose's study. Her fourth graders were given an extra week of writing, during which they were allowed to choose their own modes. This open-choice week resulted in productions written mainly in "modes manifesting least syntactic complexity."

One possible explanation might be that they were following an inner urging toward equilibrium--that is, generalizing their presently controlled linguistic structures across the entire spectrum of the writing mind. Given the concept of equilibrium, it may be that children--in the process of assimilating syntactic structures--utilize modes that allow a more comfortable level of operation. In disequilibrium, the process of accomodation may encourage the integration of those assimilated syntactic structures into more complex ones. The children's preference for less syntactically complex modes in their open-choice writing may have followed an inner urging toward assimilation. The accomodation process would highlight a mode like argumentation, which Seegars and San Jose have shown calls for higher syntactic complexity. The higher syntactic complexity demanded by argumentation may encourage an integration of less complex within more complex linguistic structures. In turn, this would lead to equilibrium again, with the children relaxing into less challenging modes--but at a more advanced syntactic level.

Such a description could explain why language experts have always claimed that the best teacher of writing is writing itself. Children do develop naturally by writing. But the fact that "practice makes perfect" in anything is no explanation of the "why" involved. The mind must work in a manner that allows it to utilize variable stimuli in the equilibration process.

Given the encouragement to write freely, children choose their contents on the basis of their experiences. But as Piaget has pointed out, unless something unsettles equilibrium--that is, unless the environment presents outside intrusions that are incomprehensible within the present stage of development--there can be no disequilibrium necessitating accomodation and growth. Children's experiences may call for the exclusive use of one mode or the integrated use of all modes. Apparently, experience is not egalitarian: some environments are more variably stimulating than others.

In writing experiments with children, stimuli like sentence-combining and sentence-manipulation experiences have succeeded in formal and informal ways to promote writing development (Mellon, 1969; Hunt and O'Donnell, 1970; O'Hare, 1973; Perron, 1974; and Combs, 1975). Obviously, these strategies capture the challenges which the writing mind finds stimulating. Yet, different syntactic challenges brought about by the use of different modes may strengthen and supplement all strategies for encouraging writing development.

As a first step toward investigating such a possibility, a non-experimental study was carried out. This descriptive effort examined the impact of the four written modes of argumentation, exposition, narration, and description on the syntactic complexity of 153 elementary school children in the third, fourth, and fifth grades. The present report is the first of several which will examine the results of that study.

This report, Part I, confines itself to an investigation of the

impact of mode on the written syntactic complexity of children at the third-grade level. Following this report, Parts II and III will cover mode's effect on the written syntactic complexity of fourth and fifth graders, respectively. Part IV will investigate the effect of the modes on the written syntactic complexity of all the children across the three grade levels; that is, the syntactic complexity levels at each grade level will be compared to determine if significant differences occur within mode from grade to grade. Further across-the-grades portions projected at this time include mode-based investigations of word fluency and its relationship to written syntactic complexity, mixed measures of mode and their influence on written syntactic complexity, and types of clauses and their relationship to written syntactic complexity.

Population and Procedures

The 50 third graders participating in this study included 26 boys and 24 girls. All were white, enrolled in two self-contained classrooms in two different schools within the same Metro Atlanta school district.

Their two female teachers were coached in the procedures for collecting the writing. Each writing assignment covered one of the four modes. The four writing events were administered by the teachers themselves during 20-minute time periods in mid-morning. A one-day interval occurred between writings, and only two writing events were scheduled during one week. The four writings were collected over a two-week period during October 1975.

Considering the grade level and normal practices in their classes, the teachers read each topic aloud, with the students asked to follow along silently. A five-minute discussion period followed this reading, allowing the students to talk about the topic. The teacher answered all questions to the best of her ability. She was also instructed to tell the class that spelling was not a crucial matter. The children were also told that they were not involved in a test and their writings would not be graded. They were informed that the writings were to be used to learn more about how children at their grade level learned to write.

Each writing topic was printed on a separate sheet of 8 x 10 paper, preceded by lines for the student's name, name of the school, and the date. The papers contained triple-spaced lines on the topic side, and students were allowed to continue onto the other side if they filled up the front. The topics, according to the mode, were:

Argumentation: "Children may someday go to school all year long. Some children in San Diego, California, do it now. Do you think it is a good idea? Why or why not?"

Exposition: "Where do you go and what do you do after school? Do you have a special place to go, a job to do, a friend to play with? Would you like to take a new friend with you after school? What can you tell about the best thing to do after school?"

Narration: "Tell about a TV show that you like a lot. What happens in the show? How does it make you feel? Do you think other children would like it, too?"

Description: "Write about yourself. Tell what you look like. Tell what you like to do. What is your school like? What does your classroom look like? What do you do there? What do you do at recess? What is your favorite subject in school?"

In any mode-based study, it should be pointed out that the concept of "mode" is not a pure one. The fact that children are stimulated to write in the mode of argumentation, for example, does not mean they will write in an argumentative way exclusively. Modes of writing overlap; children writing in exposition may take time out from their explanation to argue what's best at a critical point, to describe an entity being used, and even to narrate a related anecdote. This mixing of modes occurs in all writing.

With this in mind, then, this study defines mode as a production in which the writer's attention is directed in one of the following ways:

1. In using language that--in the main--argues a point of view, defends a position, expresses an emotional inclination, or tries to persuade, the writer is considered to be writing in the mode of argumentation.

2. In using language that--in the main--explains a procedure or an experience (in a restricted framework), the writer is considered to be writing in the mode of exposition.

3. In using language that--in the main--tells a sequence of events, observances, or experiences, the writer is considered to be writing in narration.

4. In using language that--in the main--depicts people, places, things, and/or events in detail, the writer is considered to be writing in description.

The over-all study takes its definition of mode from this researcher's level of comprehension regarding the differences involved, as noted above. The papers included in this study were those that met the criteria above. Some 44 third-grade papers were eliminated in this process, leaving 200 writings to be analyzed as representing the four mode-based productions of the 50 children participating.

Approximately 300 words per student were collected over the four writings. Although attention has been given in the past concerning valid samples of children's writings in research (Perron, 1974, p. 45), the question appears to concern writings that are not separated by means of the modes employed. There is also the problem of collecting a burdensome sample--that is, asking third graders to write more within a specified time period may produce needless problems that could undermine the research sample. For the group comparisons required of this study, therefore, it was felt that the above amounts were sufficiently representative.

The procedures used for segmenting the written productions into T-units were similar to those used by Hunt (1965), O'Donnell, Griffin, and Norris (1967), and O'Hare (1973). They are detailed, with a full description of the syntactic factors, in Perron (1974, pp. 103-110).

The syntactic variables in this study--T-unit length (words per T-unit), clauses per T-unit (dependent vs. independent clauses), and clause length (words per clause)--were chosen because they have been shown by Hunt to correlate with mental and chronological age. Also, they were among the 23 variables shown by San Jose to be significantly discriminating across the four modes.

In addition to the analysis of the productions of the full group, the students' productions were investigated based on assignment to ability groups. High, middle, and low subgroups were established by means of reading comprehension scores obtained from the Gates-McGinitie tests administered in April 1975. Five of the 50 students were recent transfers

into the district and did not have such scores; they were not included. Instead of standard scores, the grade equivalent scores were used for consistency with the later analysis of across-the-grades effects (Part IV).

The statistical procedures used in this study included Pearson's r, analysis of variance, and t-test procedures from the Statistical Package for the Social Sciences (1975). Also, repeated measures procedures were utilized, from Biomedical Computer Programs (1973). All tests were run on the IBM 360/370 systems through the Educational Research Laboratory at the University of Georgia. For all statistical procedures, the .05 level of significance was chosen as the most pertinent level because it was felt that a .1 level would have permitted possible Type I errors while a .01 level would have missed many valuable insights.

Specifically, Part I of the study is designed to investigate the following questions concerning the impact of mode on written syntactic complexity at the third-grade level:

1. Are there differences between the boys and girls in age, reading comprehension, and written syntactic complexity as measured by three syntactic factors?

2. Are there differences between the girls and boys within each of the four modes regarding written syntactic complexity as measured by T-unit length means?

3. Based on ability groupings, are there differences among the high, middle, and low subgroups concerning age, reading comprehension, and written syntactic complexity as measured by three syntactic factors?

4. Are there differences among the high, middle, and low subgroups regarding written syntactic complexity as measured by T-unit length means within each of the four modes?

5. In each of the subgroups, are there differences across the four modes regarding written syntactic complexity as measured by three syntactic factors?

6. Based on the full group data, are there differences across the four modes in written syntactic complexity as measured by three syntactic factors?

7. If differences emerge across the modes in any of the three syntactic factors (#6, above), how do the modes line up (highest to lowest) and are their rankings different in a statistically significant way, one from another?

8. Finally, are there correlations among age, sex, reading comprehension, T-unit length, clauses per T-unit, and clause length means?

Findings

The full group of 50 students was first investigated for differences between girls and boys in age, reading comprehension, and written syntactic complexity. From the standpoint of age, Table I shows that the 26 boys, who averaged 8 years, 7 months, were only slightly older than the 24 girls, with an average age of 8 years, 5 months. The difference in their ages was not statistically significant.

Their reading comprehension grade equivalent scores looked almost identical, and no statistically significant differences were observable. Written syntactic complexity, as measured by T-unit length means, was also too close for any significant difference to emerge. In clauses per T-unit, the girls' mean was higher than the boys, but their difference was not statistically significant. And finally, in clause length means, the boys and girls productions were too close to show a significant difference. Thus, in all syntactic factors, differences between the groups on factors of written syntactic complexity were not statistically significant.

TABLE I

COMPARISON OF BOYS AND GIRLS BY AGE, READING COMPREHENSION SCORES (RC), AND THREE SYNTACTIC FACTORS

		BOYS		GIRLS		
Factor	N	(N=26)	SD	(N=24)	SD	F-value
Age (yrs, mos)	50	8.7	.59	8.5	.42	1.14 (NS)
[1]RC	45	3.0	1.18	3.1	1.41	.07 (NS)
Words/T-unit	50	7.35	1.55	7.48	1.86	.08 (NS)
Clauses/T-unit	50	1.16	.10	1.22	.14	2.90 (NS)
Words/Clause	50	6.33	1.17	6.07	.95	.76 (NS)

DF: 1,48 (F-value required at .05=4.04)

NS--not significant

1. RC included 45 available Gates-McGinitie test scores (Boys, 24; Girls, 21). DF: 1,43 (F-value required at .05=4.07).

Looking at the T-unit lengths within the four modes in regards to the two sexes, Table II shows that, although girls appeared to score higher in all but the exposition mode, none of the differences was statistically significant.

In all the modes, the differences between boys and girls is too small to be of significance statistically. Thus, regardless of the mode investigated--description, narration, exposition, argumentation--the two sexes would be considered statistically to be producing writing containing syntactic complexity amounts judged as not significantly different.

TABLE II

COMPARISON OF BOYS AND GIRLS BY T-UNIT LENGTH MEANS

WITHIN THE FOUR MODES

Mode	Boys (N=26)	SD	Girls (N=24)	SD	F-value
Description	6.15	1.44	6.25	1.67	.06 (NS)
Narration	6.96	1.60	7.46	2.21	.88 (NS)
Exposition	8.24	2.74	8.06	2.55	.05 (NS)
Argumentation	10.25	3.81	10.60	5.53	.07 (NS)

DF: 1,48 (F-value required at .05=4.04)

NS--not significant

The students were assigned to ability groups based on reading comprehension scores. Table III illustrates that ability group breakdowns do not depend upon the ages of the students, since the average low group student is 8 years, 5 months; the average middle group student 8 years, 8 months; and the average high group student 8 years, 6 months. Thus, age was not significant statistically.

Reading comprehension scores would obviously be statistically different, since that is the basis of the breakdown. The low, middle, and high groups wrote significantly different T-unit lengths, clauses per T-unit, and clause lengths. In T-unit length and clauses per T-unit, differences among the ability groups were significant at or beyond the .001 level of confidence, while the differences among their clause lengths were significant at or beyond the .01 level.

TABLE III

DISTRIBUTION ACROSS ABILITY GROUPS OF AGE, T-UNIT LENGTH, CLAUSES PER T-UNIT, AND CLAUSE LENGTH MEANS

	Reading Comprehension Subgroups						
	Low		Middle		High		
Factor	(N=15)	SD	(N=15)	SD	(N=15)	SD	F-value
Age (yrs, mos)	8.5	.58	8.8	.45	8.6	.56	1.30 (NS)
[1]RC	1.8	.30	2.7	.41	4.6	.69	127.42***
Words/T-unit	6.10	.92	7.40	1.69	8.69	1.52	12.57***
Clauses/T-unit	1.12	.08	1.15	.12	1.28	.13	8.97***
Words/Clause	5.45	.62	6.42	1.17	6.81	1.02	7.88**

DF: 2,42 (F-value required at .05=3.22; at .01=5.15; at .001=8.25)

NS--not significant
**--significant at or beyond the .01 level.
***--significant at or beyond the .001 level.

1. At the time of RC testing (April 1975), the expected RC mean was 2.7.

In Table IV, the ability groups' productions were analyzed to see if differences arose in any of the four modes. The data indicate that students in the three ability groups wrote significantly different T-unit lengths in three of the four modes. Only in narration, which evidences increasing complexity across the groups, do the differences fail to reach statistical significance. The ability spread seemed to match the comprehension spread in reading, since the low level consistently wrote less complex T-units while the middle level consistently wrote T-units more complex than the low level; and, finally, the high level wrote T-units that were consistently more complex than either the low or middle levels.

TABLE IV

DISTRIBUTION ACROSS ABILITY GROUPS OF T-UNIT LENGTH

MEANS WITHIN FOUR MODES

	Reading Comprhension Subgroups						
	Low		Middle		High		
Mode	(N=15)	SD	(N=15)	SD	(N=15)	SD	F-value
Description	5.34	1.20	6.02	1.42	7.32	1.42	8.34***
Narration	6.34	1.63	7.39	2.28	7.90	1.83	2.57(NS)
Exposition	6.62	1.76	7.46	2.30	10.25	2.74	10.18***
Argumentation	7.86	2.40	10.62	2.69	12.83	6.71	4.80*

DF: 2,42 (F-value required at .05=3.22; at .01=5.15; at .001=8.25)

NS--not significant
*--significant at or beyond the .05 level.
***--significant at or beyond the .001 level.

When the three syntactic factors are investigated across the modes by ability groups, significant differences emerge. Table V presents the three syntactic factors within each mode--by separate ability group. The low ability group shows a consistent increase across the modes in all three factors. In T-unit length and clauses per T-unit, the differences are significant; in words per clause (clause length), however, the differences fail to reach the .05 level of significance.

The same thing occurs in the middle group, with T-unit length and clauses per T-unit demonstrating significant differences at or beyond the .001 level. But in clause length, the differences are not significant. In the high group, words per T-unit and clauses per T-unit are shown to be significantly different again, but here clause length is also shown as significantly different across the modes.

TABLE V

DISTRIBUTION ACROSS THE MODES OF THREE SYNTACTIC FACTORS

BY ABILITY GROUP

Sub-group	Factor	MODES[1] D	N	E	A	F-value
LOW N=15	Words/T-unit	5.34	6.34	6.61	7.86	4.98**
	Clauses/T-unit	1.02	1.24	1.11	1.24	3.64*
	Words/Clause	5.26	5.17	5.94	6.52	2.39 (NS)
MID N=15	Words/T-unit	6.02	7.40	7.46	10.62	11.53***
	Clauses/T-unit	1.01	1.19	1.07	1.57	16.40***
	Words/Clause	5.96	6.2[illegible]	6.90	7.06	1.15 (NS)
HIGH N=15	Words/T-unit	7.32	7.90	10.25	12.83	6.53**
	Clauses/T-unit	1.09	1.35	1.28	1.70	9.86***
	Words/Clause	6.69	5.88	8.19	7.50	3.43*

DF: 3,56 (F-value required at .05=2.78: at .01=4.16; at .001=6.60)

NS--not significant
*--significant at or beyond the .05 level.
**--significant at or beyond the .01 level.
***--significant at or beyond the .001 level.

1. Modes: D=Description; N=Narration; E=Exposition; A=Argumentation

Table VI presents the full group's productions across the modes. The data indicate that in all written syntactic complexity factors, the students' productions showed significant differences across the modes at or beyond the .001 level.

In T-unit length, the highest complexity is found in the mode of argumentation, while the lowest is found in description. This holds also in clauses per T-unit. In both, narration and exposition change

places with exposition scoring higher in words per T-unit while narration scores higher in clauses per T-unit.

In clause length, exposition is higher than argumentation, while description is ranked higher than narration. The directions appear to depend upon the syntactic factors being used to measure the productions. The precise recording of the rankings will be presented in tables that follow.

TABLE VI

DISTRIBUTION ACROSS THE MODES OF THE FULL GROUP'S THREE SYNTACTIC FACTORS

	MODES[1]				
Factor (N=50)	D	N	E	A	F-value
Words/T-unit	6.20	7.20	8.15	10.42	18.75***
Clauses/T-unit	1.04	1.28	1.15	1.51	24.2[illegible]***
Words/Clause	5.93	5.72	7.09	6.97	7.11***

DF: 3,196 (F-value required at .05=2.60; at .01=3.78; at .001=5.42)
***--significant at or beyond the .001 level.
1. Modes: D=Description; N=Narration; E=Exposition; A=Argumentation

With Table VI having established statistically significant differences in three syntactic factors across the modes, two-tailed t-tests were run using paired modes to determine the relative rankings of the four modes in each syntactic complexity factor.

Table VII illustrates the results in T-unit length, which Hunt (1965, p. 50) demonstrated to be "the best index of grade level" in writing analysis. The argumentation mode is shown to be the most complex

mode as measured by this factor. Exposition is significantly different as the next most complex mode, while narration is shown to be significantly below it. The least complex mode, based on the T-unit length factor, is description.

TABLE VII

T-TESTS OF T-UNIT LENGTH MEANS ACROSS PAIRED MODES

Mode X Mode (N=50)	Words/ T-unit	SD	Difference T-value	2-Tailed Signif.	Relationships
Description (D)	6.20	1.54			
			-4.10	.000	N > D
Narration (N)	7.20	1.91			
Description (D)	6.20	1.54			
			-6.95	.000	A > D
Argumentation (A)	10.42	4.67			
Description (D)	6.20	1.54			
			-6.70	.000	E > D
Exposition (E)	8.15	2.63			
Narration (N)	7.20	1.91			
			-5.14	.000	A > N
Argumentation (A)	10.42	4.67			
Narration (N)	7.20	1.91			
			-2.96	.005	E > N
Exposition (E)	8.15	2.63			
Argumentation (A)	10.42	4.67			
			3.82	.000	A > E
Exposition (E)	8.15	2.63			

Full Relationships: A > E > N > D

Table VIII illustrates the results of the t-tests run with paired modes in the clauses per T-unit factor. Again, argumentation and description were the high and low modes, but narration changed places with exposition as the next most complex mode, while exposition was significantly higher than description.

TABLE VIII

T-TESTS OF CLAUSES PER T-UNIT MEANS ACROSS PAIRED MODES

Mode X Mode (N=50)	Clauses/ T-unit	SD	Difference T-value	2-Tailed Signif.	Relat-ionships
Description (D)	1.04	.07	-6.29	.000	N > D
Narration (N)	1.28	.26			
Description (D)	1.04	.07	-7.33	.000	A > D
Argumentation (A)	1.51	.47			
Description (D)	1.04	.07	-4.17	.000	E > D
Exposition (E)	1.15	.20			
Narration (N)	1.28	.26	-3.27	.002	A > N
Argumentation (A)	1.51	.47			
Narration (N)	1.28	.26	2.60	.01	N > E
Exposition (E)	1.15	.20			
Argumentation (A)	1.51	.47	5.41	.000	A > E
Exposition (E)	1.15	.20			

Full Relationships: A > N > E > D

The last syntactic factor to be analyzed was clause length. Table IX shows the significant difference that emerged before occurred by means of a middle spread between the two high and two low modes. Exposition and argument were the high modes while description and narration were the low modes.

TABLE IX

T-TESTS OF CLAUSE LENGTH MEANS ACROSS PAIRED MODES

Mode X Mode (N=50)	Words/ Clause	SD	Difference T-value	2-Tailed Signif.	Relat-ionships
Description (D)	5.93	1.31	1.03	.30	D = N
Narration (N)	5.72	1.54			
Description (D)	5.93	1.31	-2.96	.005	A > D
Argumentation (A)	6.97	2.25			
Description (D)	5.93	1.31	-4.18	.000	E > D
Exposition (E)	7.09	2.18			
Narration (N)	5.72	1.54	-3.38	.001	A > N
Argumentation (A)	6.97	2.25			
Narration (N)	5.72	1.54	-3.92	.000	E > N
Exposition (E)	7.09	2.18			
Argumentation (A)	6.97	2.25	-0.37	.71	A = E
Exposition (E)	7.09	2.18			

Full Relationships: E=A > D=N

To summarize the relative rankings of the modes in the three syntactic factors investigated, argumentation and description are consistently shown as modes that encourage higher and lower amounts of

syntactic complexity as measured by T-unit length, clauses per T-unit, and clause length means. Although clause length means show exposition tied with argumentation as modes in which children write longer clauses, the average number of clauses in each T-unit shows exposition to be below narration while T-unit length means show exposition as ranking next highest in complexity. In the narrative mode, which ranks alongside description in clause length, the factor concerning the number of clauses per T-unit shows it next highest in complexity behind argumentation.

When the age, sex, reading comprehension, and three syntactic factors are investigated using Pearson's Product-Moment procedures, the results show that age and sex correlate neither with one another nor any of the other factors. However, reading comprehension, T-unit length, clauses per T-unit, and clause length all correlate with one another at or beyond the .01 level of significance.

Thus, the three syntactic factors investigated in this portion of the study--T-unit length (words per T-unit), clauses per T-unit, and clause length (words per clause)--represent the writing complexity levels of these third graders and are shown to correlate with the reading comprehension abilities as indications of similar measurements of human abilities.

Table X illustrates the results of the Pearson's Product-Moment procedures. The factors are compared in the following order: age, reading comprehension (RC), sex, T-unit length, clauses per T-unit, and clause length.

TABLE X

CORRELATION COEFFICIENTS AMONG AGE, SEX, READING COMPREHENSION (RC) SCORES, T-UNIT LENGTH, CLAUSES PER T-UNIT, AND CLAUSE LENGTH MEANS

Factor X Factor	Cases	Coefficients	Two-tailed Significance
Age by:			
RC	45	-.0398	.80
Sex	50	-.1690	.24
Words/T-unit	50	.1172	.42
Clauses/T-unit	50	.0454	.75
Words/Clause	50	.1290	.37
RC by:			
Sex	45	.0424	.78
Words/T-unit	45	.5889	.001
Clauses/T-unit	45	.5461	.001
Words/Clause	45	.4621	.001
Sex by:			
Words/T-unit	50	.0397	.78
Clauses/T-unit	50	.2385	.10
Words/Clause	50	.1245	.39
Words/T-unit by:			
Clauses/T-unit	50	.7268	.001
Words/Clause	50	.8974	.001
Clauses/T-unit by:			
Words/Clause	50	.3549	.01

Conclusions

This study has shown once again that mode is an important consideration in the research and teaching of children's writing. In fact, the findings of this study indicate that differences by mode are statistically significant even as early as the third-grade level.

In dealing with the questions this study was designed to handle (p. 7), the findings allow the following answers:

1. There were no significant differences between third-grade boys and girls in age, reading comprehension, or the three syntactic factors--T-unit length, clauses per T-unit, and clause length. Thus, the boys and girls in this study were of similar ages, reading levels, and writing abilities.

2. Looking at their productions within mode, the boys and girls appeared to write at similar ability levels within each of the modes of argumentation, exposition, narration, and description.

3. When the third-graders are broken down into groups based on reading comprehension abilities, their writing abilities, based on the three syntactic factors, seem to line up from low to high in the same manner as they lined up based on reading scores. And age is not a factor here--that is, the older the children the better the reader or writer doesn't hold; the reading and writing ability levels have very little to do with age.

4. When the low, middle, and high groups are compared based on their writing abilities within the four modes, their productions show up as significantly different from group to group in argumentation, exposition, and description. In narration, their differences--although moving in a similar way (increasing from low to high)--were not significant statistically. All the groups' productions clearly demonstrate a consistent climb from low to high levels of T-unit length mean scores within each of the four modes.

5. When the ability groups were investigated to determine whether mode was influential on their syntactic attainments, T-unit length means showed consistent differences within each ability group; all differences were significant statistically. Clauses per T-unit means also showed significant differences across the modes in all groups. In clause length, however, only the

high groups productions showed significant differences from mode to mode. It appears that T-unit length and clauses per T-unit factors are capable of detecting differences in syntactic complexity occasioned by the different modes at all ability levels, while clause length is less discriminating a factor for low and middle ability writers at this level. The T-unit describes the full expansion going on inside the sentence while clause length describes the size of clauses (dependent and independent) within their expanding sentence boundaries (and ignore non-clause elements which may account just as much for the sentence's expansion). Clause length, in not illustrating mode differences as readily, indicates that low and middle ability writers seem to be growing less by increasing the size of their clauses as by increasing their numbers of clauses. Clauses per T-unit indicates this by describing the increasing number of dependent clauses compared to independent clauses. Based on 7 of the 9 tests run, mode was a significant variable, regardless of the writing ability of the children.

6. Taking all third graders together, mode is shown to be a significant variable generally. All three syntactic factors illustrate that mode was significant at or beyond the .001 level. Over-all, the results indicate that mode is indeed capable of encouraging higher levels of syntactic complexity in children's writing.

7. There remained only the question of the actual differences produced in writing complexity by the modes. According to T-unit length, the mode of argumentation was measured at a significantly higher level than exposition, which in turn was measured at a significantly higher level than narration, which in turn was measured at a significantly higher level than description. It appeared, according to T-unit length, that children writing in different modes will produce more syntactic complexity in argumentation than in any of the other modes. The same was true for measurements based on clauses per T-unit means; there was more syntactic complexity present in argumentation than in narration, and this difference was significant statistically. There was also significantly more complexity in narration than in exposition, and in turn there was significantly more complexity in exposition than in description. Consistently, these two syntactic factors showed argumentation as the mode producing the highest complexity and description as the mode producing the lowest complexity. In clause length, exposition tied with argumentation as modes capable of producing the highest syntactic complexity, while narration tied with description as modes producing the lowest syntactic complexity. Thus, even when

three syntactic factors are investigated, argumentation remains the highest producer of syntactic complexity while description remains the lowest producer of syntactic complexity.

8. Finally, in comparing the different factors with one another to investigate correlations, age and sex did not correlate with each other or any of the factors, while reading comprehension, T-unit length, clauses per T-unit, and clause length factors were all shown to correlate with one another. Thus, whether the third graders were older or younger, or even boys or girls, had no bearing on the scores they made on the reading comprehension tests; nor did these factors have any bearing on their written syntactic complexity abilities.

In summary, based on the findings of Part I of this study, mode seems to play a significant role in the evaluation and research of the writing of children, regardless of their age or sex. T-unit length and clauses per T-unit factors also seem to be more discriminating in their ability to analyze syntactic complexity from mode to mode and ability group to ability group than clause length at this grade level.

The indications of this study are that children writing in the mode of argumentation will produce higher amounts of syntactic complexity than they would writing in other modes. Although the differences between exposition and narration seem to depend upon the analytic tool used, the mode of description has been shown to produce the least syntactic complexity regardless of the analytic tool.

Implications

Third graders have been shown to write more or less complexly depending on the mode employed. The different modes of argumentation, exposition, narration, and description apparently present different syntactic challenges to the children. Both Seegars' and San Jose's findings

have been validated in Part I.

The most obvious implication of these findings seems to be that children at the third-grade level should be encouraged to write in all four modes. My visits to classrooms in many parts of the country incline me to believe that elementary school children seldom get the opportunity to write in the argumentation mode. Most writing events involve description and narration. Exposition is used occasionally, but argumentation is seldom employed at all.

Certainly, a central tendency of public education in America is toward conformity. This would seem to rule out the use of the argumentation mode in the classroom--especially at the elementary level. However, it appears that argumentation encourages linguistic operations that stimulate structural stretching. It may be that argumentation is a natural stimulator of growth in writing, requiring children to restructure linguistic entities during the writing process.

Obviously, teachers usually take their clues in writing instruction from the children themselves. It is less difficult to encourage children to write by allowing them to operate comfortably at their current syntactic levels. As San Jose's children indicated, the less syntactically complex modes are very appealing. But while teachers should take their clues for writing instruction from the children themselves, some of those clues should include indications that the children are ready to attempt higher syntactic challenges.

Writing is an extremely important ingredient in the elementary classroom. Although its position in the curriculum has tumbled recently,

historically it has always been given equal status with reading and oral language. The results of this study indicate that the competent teacher would be one who not only encourages children to enjoy writing through many exciting writing experiences, but one who also requires those writing experiences to take place within different modes (including argumentation).

The findings of this study also may be of interest to developmental psycholinguistics, since they allow an interpretation of the mind as internally predisposed toward stimulating writing development. Such development requires outside intrusions at varying levels of complexity. The mind gives meaning to its experiences by interpreting them linguistically on the basis of presently controlled syntactic structures. By actively interpreting outside intrusions--and their variable structural requirements--the writing mind must vary its own modes of expression and thereby participate in the developmental process of structuring and restructuring syntactic complexity.

Thus, human cognitive and linguistic development analogically appear to be functionally as well as formally related. In both cases, their underlying structures take their cues for growth from experience. In linguistic development, the competence (internal representation of linguistic forms) undergoes structuring and restructuring. Accompanying the performance factor in language production is its variably functional direction, which may stimulate the structuring and restructuring of competence. Performance, then, would seem to play a crucial role in the development of linguistic structures.

In cognitive development, Piaget's definition of the mind as an entity with its own built-in means for promoting cognitive growth is given linguistic definition under this interpretation. Not only does experience impinge upon the mind to stimulate equilibration, but it does so at various complexity levels. The functional base of those complexity levels apparently plays a role in whether assimilation or accomodation processes are invoked for structuring or restructuring purposes.

Summary

In this study, the four modes of argumentation, exposition, narration, and description have been shown to result in significantly different levels of written syntactic complexity at the third-grade level. The findings allow for an interpretation of writing development as an internally predisposed process which may be stimulated naturally by writing in varying modes. Under such an interpretation, function is shown to be a crucial factor in the formal development of writing ability. Also under this same interpretation--by analogical extension--development in formal cognitive and linguistic processes, which are intimately related and parallel in operation, may be stimulated by variably functional experiences.

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